



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/082,264	05/20/1998	JIASHU CHEN	CHEN-1-(5442	2496

7590 02/09/2005

WILLIAM H. BOLLMAN  
MANELLI DENISON & SELTER  
2000 M STREET N.W.  
WASHINGTON, DC 20036-3307

EXAMINER
----------

GRIER, LAURA A

ART UNIT	PAPER NUMBER
----------	--------------

2644

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/082,264	CHEN, JIASHU	
	<b>Examiner</b>	<b>Art Unit</b>	
	Laura A Grier	2644	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 September 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-9, 11-15, 21, 23 and 25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-9, 11-15, 21, 23 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The specification fails to disclose the use of multiple sources without reflections and multiple sources each with reflections being applied together as one entity.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2-8, 9, 11-15, 21, 23 and 25 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said model filter function" in line 15. There is insufficient antecedent basis for this limitation in the claim.

Claims 2-7 depend from claim 8, and thus are rejected accordingly.

4. Claims 9, 12-13, 15, 21, 23 and 25, respectively recites, input signal comprising a multiple of sources with reflections and a multiple sources with reflections to be processed unity. Claim language makes the claims indefinite in respect to the fact that that sources without reflections are processed in echo-free or reflection-free acoustical rooms, etc. specifically

designed for that purpose. It is unclear as to how the varying characteristics for and a single input signal is acquired.

Claims 11, 14, depend from claim 9 and 13, respectively, and thus are rejected accordingly.

### **Claim Rejections - 35 USC § 102**

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 9, 13 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al.

Regarding **claim 9**, Chen et al. discloses methods and apparatus for producing directional sound. Chen et al.'s disclosure comprises means of determining a characteristic function, wherein the characteristic constitutes a head-related impulse response and are determined based upon a plurality of positions in a space (col. 3, lines 58-62), means of applying the characteristic function as a filter, and means of converting the filtered signal to a sound wave thus providing/producing the sound wave to a listener (figure 5b, col. 6, lines 45-67 - col. 7, lines 1-5 and col. 8, lines 1-25), and as well, Chen disclose the use of a discrete number samples to be used and eigenvalues (col. 4, lines 8-57, and col. 5, lines 49-53); and inherently provides support of a spatial feature extraction and regularization model; spatial component and temporal component

Art Unit: 2644

(summed matrix of a predetermined number of eigen vectors ranging from 3 to 16); and wherein the components are determined by a Karhunen-Loeve Expansion (col.4, lines 24-67 - col. 5, lines 1-53).

Regarding **claim 13**, Chen et al. discloses methods and apparatus for producing directional sound. Chen et al.'s disclosure comprises an environment input for receiving information of regarding the listening of the listener; means constituting a calculator with a computer program (col. 5, lines 58-65 and col. 7, lines 6-50); input for receiving a signal representing a sound which based upon a plurality of positions in a space (col. 3, lines 58-62); and left and right channel with a filter array for applying a filter to the signal, in which the function of the filter comprises a head-related impulse response; and an output for converting the filtered signals to the binaural sound and producing a sound to the listener (figure 5a and col. 6, lines 20-44 and col. 13, lines 2459) ; the characteristic function comprising data information related to the environment in which the sound is perceived (col. 3, lines 63-64).

Regarding **claim 14**, Chen's disclosure comprises eigen filters (col. 4e, lines 8-21, col. 6, lines 20-44, and col. 7, lines 6-21 and figure 5a).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 21, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begault.

Regarding **claims 21, 23, and 25**, Begault discloses a multichannel spatialization system for audio signals (figure 1). Begault's disclosure comprises delaying a sound source (with reflections) signal in a digital filter (16<sub>1</sub>-16<sub>4</sub>), col. 4, lines 61-68 and col. 5, lines 1-26; attenuation and filter of an input signal takes place in a low pass filter (12<sub>1</sub>-12<sub>4</sub>), col. 4, lines 7-10; further the digital filter provides more filtering and weighting of the filter sound signals (col. 6, lines 51-68, col. 7, lines 1-13, 42-53 and figure 2); and a summing network for summing the filtered sounds, wherein the filtered attenuated sound signal remains constant with a delayed signal, wherein the signals are adaptable to change position perspective in respect to the listener (col. 10, lines 48-68 and col. 11, lines 01-12). Eventhough, Begault fails to specifically disclose the sound reflections as claimed, he does disclose the input audio signals are discrete from each other. Sound sources with reflections well known and as well sounds without reflections well known in the art. Thus, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Begault by implementing the individual audio signal inputs as having a signal comprising reflections and some having without having reflections for the purpose of enhancing the spatial effect of the input signal prior to processing for generating virtual sound to the listener.

11. Claim 8, 12, and 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Response to Arguments***

Applicant's arguments with respect to claim 2-8, 9, 11, 12-15, 21, 23 and 25 have been considered but are moot in view of the new ground(s) of rejection.


The applicant's remarks reflected the amended claim language suggested for condition of allowance. No essential arguments were provided. However, another non-final rejection has been provided in view of claim deficiencies.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura A Grier whose telephone number is (703) 306-4819. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh N Tran can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Laura A. Grier  
February 7, 2005